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Alberta Agricultural Research Institute

Annual Report

1992 - 1993

Alberta



Alberta Agricultural Research Institute Annual Report 1992-93

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JAN 10 1994

To the Honourable Walter Paszkowski
Minister of Agriculture, Food and Rural Development

In accordance with the requirements of the Alberta Agricultural Research Institute Act, I have the honour to present to you the Annual Report of the Alberta Agricultural Research Institute. The report covers the fiscal year April 1, 1992 to March 31, 1993.

Respectfully submitted,

Bob Elliott, MLA
Chairman
Board of Directors



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Research results and technology transfer from Farming for the Future and other AARI programs have helped Alberta's primary producers to compete domestically and establish foreign markets.

Chairman's Report

In January of 1993, I was very pleased to 'take the reins' from Mr. Bob Bogle, who resigned his post as Chairman of the Alberta Agricultural Research Institute's Board of Directors. Mr. Bogle was the Board's original Chairman when the Institute was created in 1987. His able leadership helped guide the Institute to its position as Alberta's leading agricultural research coordinating and funding agency. On behalf of the Institute, I wish to extend our thanks to Mr. Bogle for his contributions to agricultural research in Alberta.

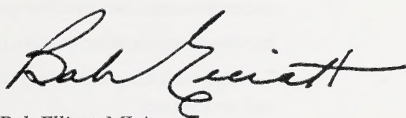
As a former research scientist at the Agriculture Canada Research Station in Beaverlodge, I have maintained a belief in the essential role research plays in the development of our agriculture and food industry. This is much more apparent in the fiercely competitive marketplace of the 1990s, where technology can draw the line between success and failure.

The Alberta Agricultural Research Institute (AARI) has made tremendous strides since 1987. A most important event was the merger in 1991 with the highly regarded Farming for the Future Program, established in 1979. Research results and technology transfer from Farming for the Future and other AARI programs have helped Alberta's primary producers to compete domestically and establish foreign markets. Research funded by the Institute has also been instrumental in the rapid growth of the province's food and beverage industry. And our ultimate client, the consumer, has enjoyed many benefits from agricultural research, including new, safe and nutritious food products.

The Government of Alberta's response to the *Creating Tomorrow* public consultation process refers to research and development as a key strategy in improving the agri-food industry's competitive position. With ongoing public and private support of agricultural research, AARI will continue to play a significant role in shaping the future goals for agriculture in Alberta.

Organizational changes in Alberta Agriculture, Food and Rural Development within the past year resulted in the loss of the Associate Minister position, held by the Honourable Shirley McClellan. We thank Mrs. McClellan for her years of commitment to agricultural research on behalf of the Institute both as an early Board director and as Associate Minister. We wish Mrs. McClellan the best in her new posting as Minister of Health.

The Board welcomed new Deputy Minister of Agriculture, Food and Rural Development, Mr. Doug Radke, as its Vice-Chairman, replacing retired Deputy Minister, Mr. Ben McEwen. Dr. Alex Livingston replaced Dr. Gavin Hamilton both as a Board director and Dean of the Western College of Veterinary Medicine in Saskatoon. The Board was reduced in number from 22 to 19 directors, with the departure of the Honourable Jack Ady, Mr. Norman Caukill and Mr. David Munro. Our special thanks to them and to Mr. McEwen for their years of service on the Board and best wishes for future endeavours. I would also like to thank all current Board and committee members for their efforts in the past year.



Bob Elliott, MLA
Chairman
Board of Directors

Report from the Executive Director

The past fiscal year was a productive and gratifying one for the Alberta Agricultural Research Institute. The vital nature of agriculture and food research was recognized during the *Creating Tomorrow* public consultation process. The Institute and, in particular, its Farming for the Future Program, were recognized for significant, ongoing contributions to Alberta's agri-food industry and the provincial economy. An important conclusion from the consultation process was that agricultural research improves the ability of Alberta's producers and processors to maintain a competitive edge and increase their global market share. A number of the Institute's goals, priorities and strategies were found to be consistent with those that emerged from *Creating Tomorrow*.

The Government of Alberta has long supported one of its major agricultural research and technology transfer programs - Farming for the Future - now an Institute program. A recent study by Serecon Management Consulting Inc of Edmonton has shown this support to be an extremely wise investment for all Albertans. The consultants performed comprehensive evaluations of ten research and ten on-farm demonstration projects under the Program. Serecon estimated these 20 projects would return a total of \$456 million to the provincial economy over the next 10 years. This dwarfs the \$77.3 million in total Farming for the Future grants for approximately 1,500 projects between 1979 and 1992. Estimated benefits and costs were in 1992 dollars.

While these studies placed AARI in a very favourable light, economically challenging times demand further focus on the Institute's goals and priorities laid out in its five-year strategic plan for the years 1992 to 1997. In this plan, the Institute has developed five major goals in support of its mission statement. Four of these goals are aimed at funding, facilitating and coordinating research in the areas of:

- Agricultural marketing
- Agricultural processing
- Resource conservation and sustainability
- Agricultural production

The Institute places a very high priority on providing beneficial research results to processors, producers, consumers and other end-users. Therein lies the fifth key goal of the Institute: funding, facilitating and coordinating activities that promote technology transfer and utilization in a timely manner.

A number of key issues were identified as components of the Institute's goals. These priorities include:

- Improvement of food safety, quality and nutritional value.
- Diversification of Alberta's agricultural products, processes and services.
- Increased private sector participation in agricultural research.
- A better understanding of how agricultural finance, policy and socio-economic issues affect producers and processors.
- Increased application of agricultural biotechnology.
- Testing, adapting and integrating new technology of benefit to producers and processors.
- Promoting public awareness of the role of agricultural research.

A great deal of cooperation and coordination is required to achieve the goals of profitability, sustainability and competitiveness from the results of agricultural research. In the past year, cooperation among producers, processors, researchers, private and public sector agencies was largely responsible for the positive results referred to in *Creating Tomorrow* and the Serecon study. The Alberta Agricultural Research Institute will continue to foster a cooperative and coordinated approach to agricultural research in Alberta.

A handwritten signature in black ink, appearing to read 'R.G. Christian', with a long, sweeping horizontal stroke at the end.

R.G. Christian, DVM
Executive Director

Introduction

The Alberta Agricultural Research Institute (AARI) is the leading agency in Alberta for funding, coordinating and facilitating agricultural research. AARI has existed since 1987, when it was created as a provincial crown corporation. Its major research and technology transfer program, Farming for the Future, has been supported by the Alberta Government since 1979. AARI has administered Farming for the Future since April 1, 1991. Programs administered by the Institute in fiscal year 1992-93 were:

- Farming for the Future Research
- Farming for the Future On-Farm Demonstration
- Matching Grants
- Research Coordination
- Research Professorship
- National Agricultural Biotechnology Initiative
- Scientific Conference Assistance
- Agricultural Research Reviews
- Externally Funded Research



AARI Board of Directors 1992-93

Back row (L to R): Dr. Trevor Thorpe, Mr. Ralph Jespersen, Mrs. Dolores Thornton, Dr. Alan Vanterpool, Mr. Norman Storch, Dr. Ed Tyrchniewicz, Mr. Gail Fjordbotten. Front row (L to R): Dr. Gordon Dorrell, Mr. Ben Schrader, Mr. Tom Towers, Mrs. Ulla De Bruijn, Mr. Jim Hole.

Missing from photo: Dr. Bob Elliott (Chairman), Mr. Doug Radke (Vice-Chairman), Mr. Don Althen, Dr. Alex Livingston, Mr. Peter Hill, Mr. Gary Severtson (MLA), Mr. Gordon Wells.

The Institute is governed by a Board of Directors. The Board consists of producers, members of the Alberta Legislative Assembly and representatives of universities, government agencies, the agri-food industry and private associations. As indicated in AARI's organizational chart (Appendix 1), a number of strategic, research and on-farm demonstration committees report to the Board. A major function of Institute committees is to evaluate and prioritize research and technology transfer project proposals.

Daily activities of the Institute are conducted by the Research Division of Alberta Agriculture, Food and Rural Development. Research grant applications are processed and approved projects are administered. Staff organize Board meetings, tours of agricultural research facilities and Farming for the Future conferences. Information on research is provided through publications such as the annual report and the Institute's newsletter, *Research Report*. A computerized database, AGRIS, is also updated with summaries of projects from the Farming for the Future, Matching Grants and Research Coordination Programs. The database can be accessed at (403)438-2209.

Additional information about the Alberta Agricultural Research Institute appears in its 1993 brochure. A copy may be obtained from the Research Division, Alberta Agriculture, Food and Rural Development, #202, J.G. O'Donoghue Building, 7000-113 Street, Edmonton, Alberta T6H 5T6. Telephone (403)427-1956. FAX (403)427-3252.

Research Highlights

The Alberta Agricultural Research Institute funds hundreds of projects yearly under various programs. Program description and funding are presented in Appendix 3. A complete listing of new and continued projects funded during the fiscal period may be obtained from the Research Division. The following research highlights are discussed relative to the Institute's main goals in its five-year strategic plan. They have been selected on the basis of completed results of proven or potential benefit to Alberta's agri-food industry.

Agricultural Marketing Research

In the 1990s, tough global competition and shifting consumer preferences have changed the face of agriculture. Traditional, yield-driven agriculture is now determined first, in many cases, by better knowledge of the marketplace. Market research and its resulting information is vital for Alberta's processors and producers to increase their market share and profitability. Investigation of various approaches to penetrate new markets and expand existing ones has been identified by AARI as a priority.

AARI funds, facilitates and coordinates research aimed at supplying Alberta's agri-food industry with key market information for maximizing profitability. This is of particular importance to Alberta's beef industry. Cattle and calves remain Alberta's most important commodities, generating 37 percent of farm income in 1991. Value-added processing of beef is also extremely important to the provincial economy. In 1990, the value of red meat shipments was \$2.29 billion, over 50 percent of the \$4.52 billion total for processed food.

Innovative marketing has played an important role in the success of Alberta's beef industry. It will be expected to play an even larger role if the Government's target, set out in *Creating Tomorrow*, of doubling the value of food processing shipments by 2010 is to be met.

"Alberta beef" is synonymous with quality and has gained international status. However, in recent years, concern has arisen over a North American trend of declining red meat consumption. This concern has been researched under two of AARI's programs - the Research Professorship Program and the Farming for the Future Research Program.

A marketing professorship established by the Institute under the Research Professorship Program - "Marketing of Value-Added Agricultural and Food Products Research Professorship" - studied various aspects of meat marketing. A main conclusion of one study - "Canadian Demand for Meats" - was that chicken producers and processors are winning the battle for market share of Canadians' declining food budget, at the expense of red meats such as beef. Many reasons were given for the trend in beef consumption. The overriding consumer decision in meat purchase appears to be price. A secondary reason is the image poultry products have gained in recent years as being generally healthier than beef, a consumer perception not strictly factual. The researchers feel one possible way to counteract downward trends in beef consumption is for the beef industry to diversify its products, as the poultry industry has with new products such as chicken nuggets and deboned chicken.

The trend in beef consumption has been addressed in a recent marketing research project funded under AARI's Farming for the Future Research Program. "The Effect of Advertising and Demographic Characteristics on the



Innovative marketing research contributes to the success of Alberta's red meat industry.

Demand for Beef" will study the possible effects of generic advertising ("Eat Alberta Beef") on beef demand. Through agencies such as the Alberta Cattle Commission and the Beef Information Centre, producers have spent a significant amount of money on generic beef advertising. On the other hand, there has been a lack of generic advertising for chicken and turkey. It is essential for producers to know if they are getting 'the maximum bang for their advertising dollar.' The beef advertising research will attempt to answer this question.

Agricultural Processing Research

Adding value to Alberta's agricultural commodities is a high priority of the Government of Alberta and the Alberta Agricultural Research Institute. In the Government's recent economic development strategy paper, *Seizing Opportunity*, targeting value-added activities is listed as an important strategy for building on Alberta's strengths. The paper notes that food and beverage shipments (\$4.9 billion) now equal farm cash receipts. The sector adds about \$1 billion a year to the provincial economy. In response to the *Creating Tomorrow* consultation process, the Government has adopted the target of doubling the value of food processing shipments by 2010.

As mentioned in the Executive Director's report, agricultural processing research is a major goal of the Institute. Results from this research contribute to the profitability of Alberta's agri-food industry through development of new food products and packaging techniques. Research in this area must respond to changing consumer preferences and market characteristics identified by agricultural marketing research.

Alberta has been a pioneer in the research and commercialization of an innovative packaging technology for shelf-life extension of perishable foods. Modified (controlled) atmosphere packaging (MAP) partially or totally replaces oxygen inside the food package with harmless gases such as carbon dioxide and nitrogen. Oxygen increases the rate of food spoilage. The main advantages of MAP are:

1. A significant increase in the food's shelf-life, thereby improving service to existing markets and creating opportunities for new domestic and export markets.
2. Protection from food poisoning bacteria.

Some of the early MAP research in Alberta was funded under AARI's Farming for the Future Research Program. In 1979, the Program supported a study to improve the shelf-life of bakery products. The packaging technology arising from this research boosted the shelf-life of English crumpets from four days to an amazing two months. This enabled the Alberta company to secure distant markets. As a direct result of the research project, production increased from 300 to 12,000 units per day.

The economic impact of the MAP research project has been substantial. In 1992 dollars, the initial Farming for the Future research investment of \$100,000 has returned a total of over \$7 million. More importantly, the initial success of MAP technology has led to its use by a number of Alberta processors. It has been extremely successful in the sandwich industry, where highly perishable products containing meat and cheese can now retain their quality and safety for up to 40 days.



Alberta has pioneered research and commercialization of MAP (modified atmosphere packaging) technology.

Modified atmosphere packaging has been touted by food technologists as the 'wave of the future' for packaging fresh food. With increased consumer preference for fresh, convenient food items, MAP technology has opened new doors for the agri-food industry. Its application continues to grow in Alberta's food processing sector. Numerous companies have used MAP for diverse products such as meat pies, chicken nuggets and cutlets, pasta, shredded cheese, fresh boxed pork, luncheon meat and bulk weiners. Alberta also sells gas-packed beef jerky to Japan.

The initial and subsequent research funded by the Alberta Agricultural Research Institute has contributed to Alberta's ranking as the Canadian leader, and among the North American leaders, in the technology and commercialization of controlled atmosphere packaging.

Resource Conservation and Sustainability Research

Apart from the essential role of soil and water in agricultural production, public concern about resource conservation has grown in recent years. The Alberta Agricultural Research Institute acknowledges the critical nature of soil, water and other resources through its continued support of conservation/sustainability research. The importance of resource conservation and production sustainability is identified in the Institute's major goal of funding, coordinating and facilitating research aimed at improving the management of a productive land and water base.

The Institute's conservation/sustainability goal extends to research on the interface between agriculture and other land uses such as forestry, wildlife and recreation. In funding research aimed at conservation of natural resources, the Institute places high priority on the environmental impact of new technology.

Seeking improved methods to preserve Alberta's resource base was the focus of an extensive research study administered by AARI and funded by the Canada/Alberta Soil Conservation Initiative (CASCI). The project - "Sustainable Cropping Research Systems Study" - was initiated in 1991 under the supervision of AARI's Soil Conservation Research Professorship. The study was a model of shared cooperation among multi-disciplinary teams of researchers from the Canada Department of Agriculture (CDA), the University of Alberta and Alberta Agriculture, Food and Rural Development. The extent of this touchstone study reflects the universal concern with preservation of our precious agricultural resources.

The overriding philosophy of the study was that agricultural practices not only impact on short-term profitability, but also must be conducted with the best available scientific information to ensure long-term quality and quantity of resources. The necessity for long-term conservation research studies has acquired new meaning globally in view of changing climate and land management issues.

A number of long-term research studies on sustainable cropping systems already exist in the province. The University of Alberta, CDA Beaverlodge and, most notably, CDA Lethbridge have maintained sustainable cropping study plots for many years. The historic 1905 and 1912 crop rotation plots at the CDA Lethbridge Research Station, for example, are among the oldest in Canada and are extremely valuable research resources.

The "Sustainable Cropping Systems Research Study" was a vehicle for additional funding of the existing long-term plot studies as well as new

The Alberta Agricultural Research Institute acknowledges the critical nature of soil, water and other resources through its continued support of conservation/sustainability research.

investigations on conservation/sustainability. An important objective of the study was to initiate additional long-term cropping research in soil zone areas of the province not represented by the existing study plots. One site was started in the brown soil zone at Bow Island and another in the dark brown soil zone at Three Hills. With the two new experimental plots, all dominant agro-ecological areas in Alberta were represented in the sustainability study.

This landmark venture has yielded many positive results to date. At the Lethbridge station, valuable new information has been obtained from individual sub-projects, which investigated:

- Nitrate leaching under dryland cropping systems.
- Long-term spring wheat response to summerfallow frequency and organic amendment.
- Wheat and barley response to summerfallow treatment.
- Suppression of zinc and copper uptake by phosphorus fertilization in long-term wheat rotations.
- Organic matter characteristics as influenced by long-term crop rotation and nutritive amendment.
- Organic matter as influenced by long-term tillage practices.
- 1992 agronomic data from selected treatments of the long-term cropping experiments.

The long-term experiment at CDA's Beaverlodge Research Station determined the effects of various agronomic treatments on gray luvisol soil. A very important finding from the study showed this soil type can be significantly improved by including forages in a six-year crop rotation (three years barley/three years forage).



University of Alberta researchers studied alternative cropping systems to preserve Alberta's resource base.

Researchers at the University of Alberta's Department of Soil Science conducted a number of projects within the study. The objectives of the projects were to investigate alternative cropping systems and soil management practices (reduced or zero tillage, for example) of potential benefit to soil conservation and fertility. Conventional and alternative cropping systems were studied in central Alberta. Improved soil fertility and conservation were benefits found by reducing soil tillage and introduction of annual nitrogen-fixing legumes into a crop rotation.

The "Sustainable Cropping Systems Research Study" has already yielded a wealth of valuable knowledge and technology. The study is ongoing and its

full dividends will only be evident to future generations of Albertans. This cooperative and coordinated venture typifies the spirit of 'building together' evident in Alberta's agricultural community.

The Institute continued its support of an important conservation project under the Research Coordination Program. "Coordination of Soil and Water Engineering in Alberta" began in fiscal year 1988/89. Researchers from Agriculture Canada, the University of Alberta and Alberta Agriculture, Food and Rural Development have since conducted numerous meetings and workshops to coordinate improved methods of soil and water management. A soil compaction workshop was held, for example, under this project. Results from the workshop have been very positive, leading to demonstration trials to clarify the causes of compaction and determine the merits of various subsoiling techniques.

Agricultural Production Research

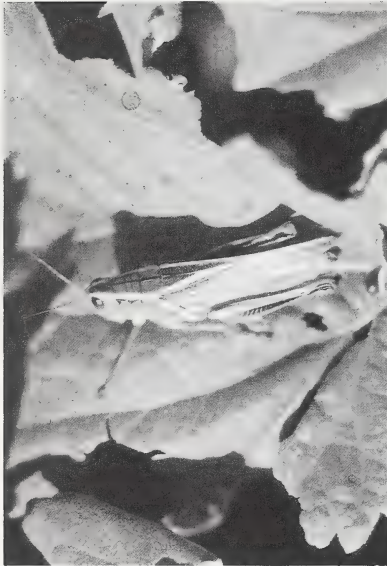
In the early days of farming in Alberta, food scarcity was a hard fact of life. Agricultural research contributed to higher yielding crops suited to Alberta growing conditions. Research also led to improved animal productivity. Alberta is now a leading exporter of raw agricultural commodities. However, the global marketplace has become increasingly dynamic and specialized. To remain competitive in tough markets, Alberta's production sector relies more on research directed at increasing efficiency, cost-effectiveness and profitability.

One of the main goals of the Institute is to fund, coordinate and facilitate research aimed at improving agricultural production efficiency and developing cost-saving crop and livestock production technologies. High priority is given to innovations that will improve competitiveness and profitability in the global market.

Insect pests reduce the production sector's profitability through costs associated with crop damage and control measures. Grasshoppers are of particular concern to Alberta producers due to their seemingly random but devastating impact on cereal crops. Historical data indicates annual costs of grasshopper crop damage and control measures vary from \$2-30 million. These figures are conservative since they do not account for damage to forages and rangeland. Serious infestations occur two or three years out of every decade. Peak years can result in losses of \$50 million. Even a modest (10-20 percent) reduction in damage and control costs would be worth several millions of dollars to producers.

Two complementary research projects funded by AARI under its Farming for the Future Research Program explored different but innovative methods to alleviate the grasshopper problem in Alberta. These projects were a joint effort of Agriculture Canada and Alberta Agriculture, Food and Rural Development.

The first study took a proactive approach to grasshopper control. A computer-based information system was developed for predicting grasshopper outbreaks. Up to 50 years of previously collected data on grasshopper infestations was used in developing the forecasting system. Historically, serious problems with the insects have been dealt with by chemical control. With the results from this research, producers can now take control measures before infestations of economic magnitude occur. The technology arising from this research has drawn worldwide attention.



Results of AARI funded research dramatically reduce the cost of grasshopper damage.

The second grasshopper research project examined biological control agents as cost-effective and environmentally responsible alternatives to insecticides. Promising results were obtained from the use of a fungus, *Bearveria bassinana*, although further study of its effectiveness is required. The use of microorganisms in insect control reflects a global trend aimed at preserving the environment and reducing input costs to the farmer.

The concept of a reliable grasshopper forecasting system in concert with the application of biological control creates tremendous potential to minimize the cost of grasshopper infestation, thereby improving profitability.

A very conservative estimate of biological control benefits suggests a long-term cost reduction of 20 percent. According to the Serecon consultants, the economic benefits arising from the research would be about \$13.1 million over a ten-year period. (All economic benefit values from the Serecon study herein are in 1992 dollars). The total cost of the two research projects was only \$334,588, in comparison. The economic benefit estimate is considered very conservative because it assumes only one serious outbreak in the next decade. It also does not take into account grasshopper damage to forages and rangeland.

On the livestock side, feed represents a major cost item for livestock producers. With the wide array of feedstuffs available, it is imperative that Alberta farmers are receiving the best information about feed efficiency, digestibility and nutritive value. Even slight improvements in matching feed to livestock can dramatically improve profitability.

AARI's Farming for the Future Program funded a research project to evaluate the efficiency and nutritive value of various feeds. The project was conducted at the Ruminant Feed Evaluation Unit on the University of Alberta Farm. Over 300 feedstuffs were evaluated with sophisticated chemical instruments. The new methodology provided what is now one of the largest databases in the world on digestibility and voluntary intake of animal feed.

This research highlighted another main goal of the Institute: technology transfer. Results from the study have been of great benefit to the production sector and feed processors. Vastly improved information is available to producers for designing optimal livestock feeding regimens. This information can be used to produce healthier, higher quality livestock at a lower cost. Total AARI funding for this project, along with a straw digestibility study by the same researcher, was \$1.1 million. The Serecon study estimated the economic value of these two projects at \$34 million over ten years.

Technology Transfer and Utilization

The best agricultural research results in the world are of no practical value to the agri-food industry unless they are made available to commercial end-users. In today's world, where events occur rapidly and concerns change frequently, technology transfer is not a simple matter of getting information out to the processor and producer. The transfer process must be speedy in order to keep pace with competitors. It must also be sensitive to issues such as food quality and safety, environmental protection, animal welfare and socio-economic impact.

The Alberta Agricultural Research Institute has placed increasing importance on the role of technology transfer in benefiting Alberta's agriculture and food industry. While many programs and services administered by the Research

The Alberta Agricultural Research Institute has placed increasing importance on the role of technology transfer in benefiting Alberta's agriculture and food industry.

Division contain elements of technology transfer, the main vehicle has traditionally been the Farming for the Future On-Farm Demonstration Program. Its grassroots nature has received tremendous praise from the farming community for a successful record in putting beneficial new technology and farming practices to work.

Alberta-grown field peas have steadily increased in popularity in recent years, topping 200,000 acres in 1992. The value of field peas and other pulses lies in their versatility as an alternate to conventional cereal crops. They can be used as human food and animal feed. Their ability to fix nitrogen also reduces fertilizer costs and aids in soil fertility/conservation.

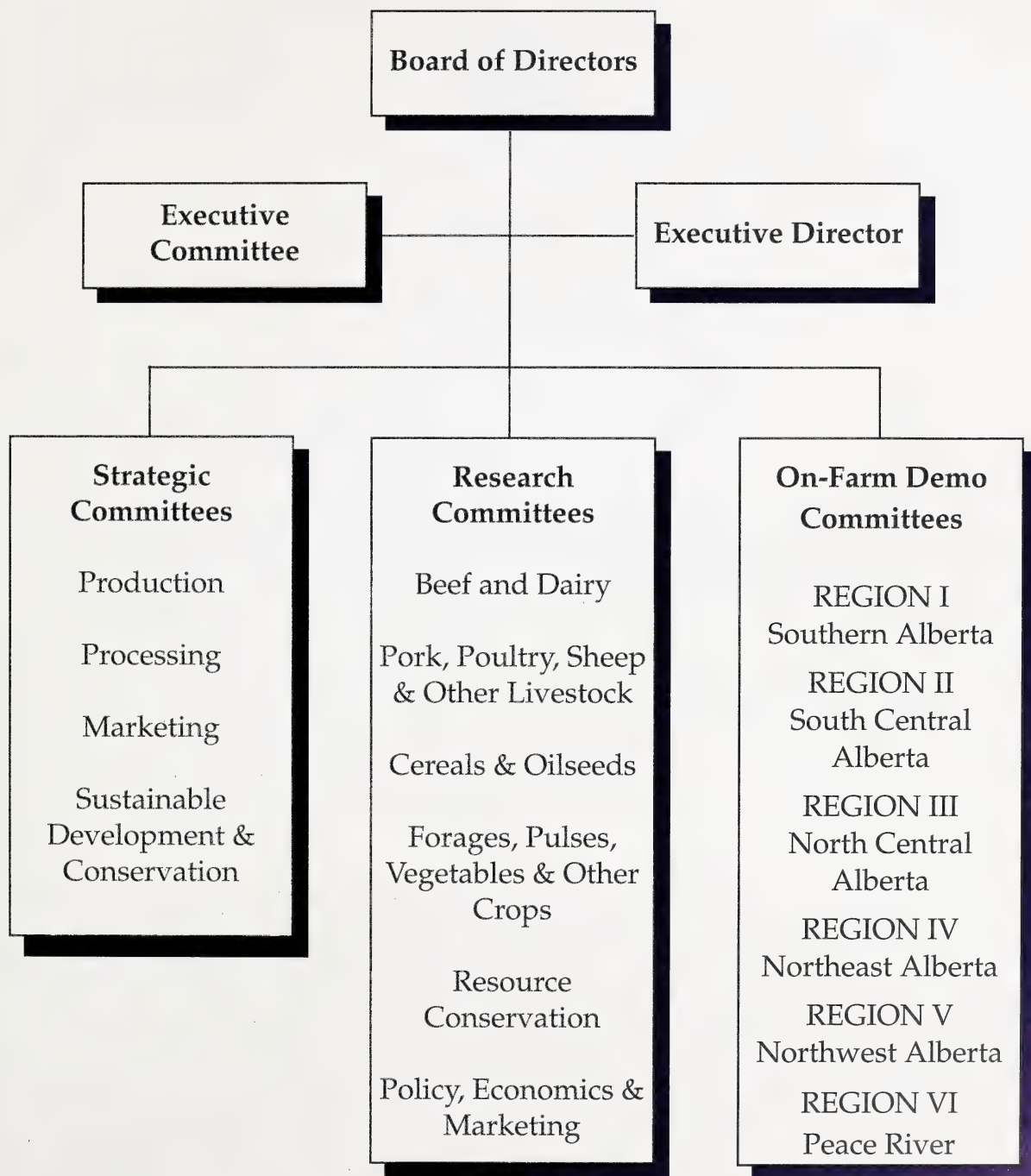
Three related On-Farm projects clearly demonstrated to Alberta producers the benefits of field peas as an alternative to conventional cereal crops. A cooperative effort with the Alberta Pulse Growers Commission, the three projects involved ten farmers from 11 districts in three central Alberta regions. Ten field pea varieties were used to obtain yield, protein and agronomic data. Demonstration plots were established for field days in which other producers could discuss the use of peas in cropping rotations and in human and livestock nutrition.

The benefits of the three pea demonstration projects were evaluated by the Serecon consultants. Based on conservative estimates of yield, input costs and a total of 170,000 acres for regions II, III and IV, the varieties demonstrated were expected to return about \$22.1 million per year. Grants provided by AARI's Farming for the Future Program for the three projects totalled \$24,893.

The return of \$22.1 million is probably not a significant increase over conventional crops grown in the area. However, as with most agricultural research and technology transfer, benefits cannot be measured in dollars alone. In the case of peas, the main added advantages are for producers to have an alternative crop, reduced fertilizer cost and better weed control.

It is sometimes difficult to accurately measure the value of on-farm demonstrations as well as other forms of technology transfer. There is no doubt, however, that raising awareness of new technology has an overall positive value on the profitability and long-term sustainability of the agriculture and food industry. Partnerships built through information sharing among the research community, private industry and the public sector strengthen agriculture in Alberta.

Appendix 1: AARI Organizational Chart



Appendix 2: Financial Statements



ALBERTA LEGISLATURE

OFFICE OF THE AUDITOR GENERAL

AUDITOR'S REPORT

To the Members of the Board of the
Alberta Agricultural Research Institute

I have audited the balance sheet of the Alberta Agricultural Research Institute as at March 31, 1993 and the statement of revenue, expenditure and unexpended funds for the year then ended. These financial statements are the responsibility of the Institute's management. My responsibility is to express an opinion on these financial statements based on my audit.

I conducted my audit in accordance with generally accepted auditing standards. Those standards require that I plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation.

In my opinion, these financial statements present fairly, in all material respects, the financial position of the Institute as at March 31, 1993 and the results of its operations and the changes in its financial position for the year then ended in accordance with generally accepted accounting principles.

Donald D. Salmon

FCA
Auditor General

Edmonton, Alberta
May 21, 1993

ALBERTA AGRICULTURAL RESEARCH INSTITUTE

BALANCE SHEET

AS AT MARCH 31, 1993

	<u>1993</u>		<u>1992</u>
	<u>Budget</u>	<u>Actual</u>	<u>Actual</u>
	(Note 7)		
<u>ASSETS</u>			
Cash	\$3,270,043	\$3,157,618	\$3,364,876
Accounts receivable:			
Due from Province of Alberta	-	950	13,995
Due from Government of Canada	<u>-</u>	<u>-</u>	<u>102</u>
	<u>\$3,270,043</u>	<u>\$3,158,568</u>	<u>\$3,378,973</u>
 <u>LIABILITIES AND UNEXPENDED FUNDS</u>			
Accounts payable and unearned revenue	\$1,649,043	\$1,195,515	\$ 843,930
Unexpended funds (Note 8)	<u>1,621,000</u>	<u>1,963,053</u>	<u>2,535,043</u>
	<u>\$3,270,043</u>	<u>\$3,158,568</u>	<u>\$3,378,973</u>

The accompanying notes are part
of these financial statements.

ALBERTA AGRICULTURAL RESEARCH INSTITUTE

STATEMENT OF REVENUE, EXPENDITURE AND UNEXPENDED FUNDS

FOR THE YEAR ENDED MARCH 31, 1993

	<u>1993</u>		<u>1992</u>
	<u>Budget</u>	<u>Actual</u>	<u>Actual</u>
	(Note 7)		
<u>REVENUE</u>			
Contributions from the General Revenue Fund (Note 3)	\$ 860,000	\$ 860,000	\$ 850,000
Contributions from the Government of Canada:			
Western Economic Diversification Program (Note 4)	500,000	950,000	500,000
Environmental Sustainability Initiative	-	6,200	472,811
Revenue Canada	-	-	102
Interest	150,000	222,780	293,863
Contributions from sponsors	-	145,393	202,108
Conference grant from the Alberta Heritage Savings Trust Fund	-	17,921	-
Administration fees on contracted research	5,000	2,235	23,388
Canada/Alberta Soil Conservation Initiative	375,000	-	375,000
Research Coordination Conference	-	-	2,100
	<u>1,890,000</u>	<u>2,204,529</u>	<u>2,719,372</u>

<u>EXPENDITURE</u>			
Research grants (Note 5)	2,291,000	2,191,578	489,296
Administered awards	285,000	243,528	128,381
Administration expenses	200,000	171,899	165,768
Sponsored research (Note 6)	-	145,393	202,108
Farming for the Future program conference costs	-	17,921	-
Environmental Sustainability Initiative	-	6,200	472,811
	<u>2,776,000</u>	<u>2,776,519</u>	<u>1,458,364</u>
Excess (deficiency) of revenue over expenditure	<u>(886,000)</u>	<u>(571,990)</u>	<u>1,261,008</u>
Unexpended funds at beginning of year	<u>2,507,000</u>	<u>2,535,043</u>	<u>1,274,035</u>
Unexpended funds at end of year	<u>\$1,621,000</u>	<u>\$1,963,053</u>	<u>\$2,535,043</u>

ALBERTA AGRICULTURAL RESEARCH INSTITUTE

NOTES TO THE FINANCIAL STATEMENTS

MARCH 31, 1993

Note 1 Authority

The Alberta Agricultural Research Institute operates as a provincial corporation under the authority of the Alberta Agricultural Research Institute Act, Chapter A-13.7, 1987, Statutes of Alberta 1987 as amended.

The purpose of the Institute is to promote, coordinate, prioritize and support agricultural research ensuring transfer of the resulting knowledge for the benefit of a viable and sustainable agri-food industry.

Note 2 Significant Accounting Policies

Research Grants

Research grants are recorded when approved for payment by the Board of Directors.

Unexpended balances of grant funds held in researchers' accounts are not reflected in these financial statements.

Farming for the Future Program

Since April 1, 1991 the Institute has been responsible for approving and monitoring the use of grants paid from the Alberta Heritage Savings Trust Fund under the Farming for the Future Research and On-Farm Demonstration Programs. The grants are paid directly to recipients from the Heritage Fund and are not reflected in these financial statements.

Effective April 1, 1993 the Institute will receive a grant from the Alberta Heritage Savings Trust Fund and will pay program costs and approved grants to recipients directly from its corporate account.

Contributions from Sponsors

Contributions from sponsors represent cash donations to the Institute for specific research projects and do not include donations in-kind.

Administration Expenses

Certain salaries and other overhead costs, as well as accommodation costs incurred in the administration of the Institute, are borne by the General Revenue Fund and are not reflected in these financial statements.

Changes in Financial Position

A statement of changes in financial position is not provided as disclosure in the financial statements is considered to be adequate.

Note 3 Contributions from the General Revenue Fund

Contributions from the General Revenue Fund are subject to the approval of annual appropriations. The Institute may be required to refund unexpended portions of contributions held at the end of a fiscal year.

Note 4 Contributions from the Government of Canada

Pursuant to an agreement between the Government of Canada's Department of Western Economic Diversification, the Government of Canada, and the Alberta Agricultural Research Institute, Canada agreed to contribute \$4,000,000 to the Institute's agricultural research activities. The agreement was amended in March 1992 to specify that the balance of the above amount still due to the Institute would be paid as follows: 1991-92 \$500,000; 1992-93 \$950,000.

Note 5 Research Grants

In 1990-91, the Institute changed its basis of approving research grants from a calendar year to a fiscal year. As a transitional measure, grants were approved for a fifteen month period. This had the effect of reducing 1991-92 research grant expenditures.

Note 6 Sponsored Research

Specific research projects are carried out in co-operation with Alberta Agriculture researchers and are funded by Industry and other Provincial government sponsors.

Note 7 Budget

The 1992-93 budget was approved by the Board of Alberta Agricultural Research Institute in February, 1992.

Note 8 Unexpended Funds

In November 1992, the Institute's Board of Directors approved spending one-half of the Institute's unexpended funds during 1993-94.

Note 9 Approval of Financial Statements

These financial statements were approved by management.

Appendix 3: AARI Programs - Description and Funding

AARI Programs:

Farming for the Future Research Program	AARI funds research with potential to improve the profitability and long-term sustainability of Alberta's agriculture and food industry.
Farming for the Future On-Farm Demonstration Program	AARI's main technology transfer funding program. Cooperation in action among researchers, extension staff and producers to demonstrate new technology on the farm.
Matching Grants Program	The Institute's key research link with the private sector. AARI matches private sector funding of agricultural research. May also involve joint research with federal agencies or other provinces.
Research Coordination Program	AARI funds research planning meetings for agricultural researchers to minimize research duplication and maximize information sharing.
Research Professorship Program	AARI funds research in targeted areas requiring intensification of scientific efforts. Areas of research and funding established by AARI.
National Agricultural Biotechnology Initiative	AARI supports projects aimed at commercialization of biotechnology. Joint program involving the federal government and four western provinces.
Scientific Conference Assistance	Information exchange and technology transfer relevant to Alberta's agriculture and food industry.
Other Programs (Non-funding):	
Agricultural Research Reviews Program	Cyclical reviews of research needs for specific agricultural commodities, resources and disciplines.
Externally Funded Research Program	AARI administers research funds received from private organizations or public sector funding agencies.

Table 1: Total Funding by Program, Fiscal Year 1992-93

Program	Total funding, dollars April 1/92-March 31/93
Farming for the future research	3,996,757
Farming for the future on-farm demonstration	595,525
Matching grants	1,557,739
Research coordination	21,000
Research professorship	*391,000
National agricultural biotechnology initiative	77,500
Scientific conference assistance	2,500
TOTAL	6,642,021

*\$90,000 funded by the Canada/Alberta Soil Conservation Initiative

Appendix 4: AARI Committee Members

Executive Committee

<i>Chairman:</i>	Dr. Bob Elliott MLA, Grande Prairie	<i>Members:</i> Dr. Ed Tyrchniewicz University of Alberta, Edmonton	Mr. Gordon Wells Tradex International, Calgary
<i>Vice-Chairman:</i>	Mr. Doug Radke Deputy Minister, *AAFRD, Edmonton	Mr. Gail Fjordbotten Producer, Granum	Mr. Norman Storch Producer, Hanna
		Mr. Tom Towers Producer, Red Deer	Dr. Ralph Christian AARI Executive Director, Edmonton (non-voting)

Research Committees

Program Area	Beef and Dairy	Pork, Poultry, Sheep & Other Livestock	Cereals and Oilseeds
<i>Chairman:</i>	Mr. Ben Schrader AARI Director Producer, Jarvie	Mrs. Ulla De Bruijn AARI Director Producer, Ponoka	Mr. Don Althen AARI Director Producer, Del Bonita
<i>Vice-Chairman:</i>	Vacant	Mr. Gary Severtson AARI Director MLA, Innisfail	Dr. Trevor Thorpe AARI Director University of Calgary, Calgary
<i>Executive Secretary:</i>	Mr. Doug Milligan AAFRD, Calgary	Dr. James Hanson AAFRD, Edmonton	Mr. Phil Thomas AAFRD, Lacombe
<i>Members:</i>	Dr. Glen Coulter Agriculture Canada, Lethbridge	Mr. Jurgen Preugschas Alberta Pork Producers Development Corp, Mayerthorpe	Mr. Nick Turko Ellison Milling Company, Lethbridge
	Mr. Francis Gardner Producer, Nanton	Dr. Al Schaefer Agriculture Canada, Lacombe	Mr. Eugene Elm Producer, Hardisty
	Dr. Ted Mitenko Alta Genetics Inc, Calgary	Dr. Don Hamilton Western College of Veterinary Medicine, Saskatoon	Mr. Robert Graham Producer, Olds
	Dr. Kee Jim Feedlot Health Management Services, Okotoks	Dr. George Foxcroft University of Alberta, Edmonton	Dr. Maurice Moloney University of Calgary, Calgary
	Dr. Eugene Janzen Western College of Veterinary Medicine, Saskatoon	Mrs. Kathy Playdon Alberta Sheep and Wool Commission, Stony Plain	Dr. Ken Richards Agriculture Canada, Lethbridge
	Dr. Gary Mathison University of Alberta, Edmonton	Mr. Norman Moore Alberta Game Growers Association, Alder Flats	Mr. Al Muchka Alberta Canola Producers Commission, Acme
	Mr. Elgar Grinde Alberta Cattle Commission, Holden	Mr. Don Potter Poultry Consultant, Edmonton	Dr. Michelle Veeman University of Alberta, Edmonton
	Mr. Jim Steuhmer Producer, Millet	Dr. Maurice Stewart Veterinarian, Calgary	Mr. Don Cox Alberta Barley Commission, Fairview
	Dr. Frank Novak University of Alberta, Edmonton	Mr. Raymond Wood Producer, Peace River	Dr. Buncha Ooraikul University of Alberta, Edmonton

*Alberta Agriculture, Food and Rural Development

Program Area	Forage, Pulse, Vegetable and Other Crops	Resource Conservation	Policy, Economics and Marketing
<i>Chairman:</i>	Mr. Jim Hole AARI Director Hole's Greenhouses and Gardens Ltd, St. Albert	A/Chairman: Mr. Norman Storch AARI Director Producer, Hanna	Mr. Ralph Jespersen AARI Director Producer, Spruce Grove
<i>Vice-Chairman:</i>	Mrs. Dolores Thornton AARI Director Producer, Calgary	Vacant	Vacant
<i>Executive Secretary:</i>	Mr. Tom Krahn AAFRD, Brooks	Mr. Brent Paterson AAFRD, Lethbridge	Mr. Arnold De Leeuw AAFRD, Edmonton
<i>Members:</i>	Mr. Ray Murphy Alberta Forage Council, Bonnyville	Dr. David Chanasyk University of Alberta, Edmonton	Mrs. Marilyn Clarke Calgary Co-op Association, Calgary
	Dr. Rick Knowles University of Alberta, Edmonton	Mr. Ron Svanes Producer, Carmangay	Dr. Elwin Smith Agriculture Canada, Lethbridge
	Dr. Dermot Lynch Agriculture Canada, Lethbridge	Mr. Bill Norris Dryland Salinity Association, Warner	Mr. Frank Spanbauer Producer, Barnwell
	Mrs. Holly Hallet Alberta Women's Institute, Carstairs	Mr. Bryan Hearn Producer, St. Paul	Dr. Mel Lerohl University of Alberta, Edmonton
	Mr. Rod Bradshaw Producer, Innisfail	Mr. Henry Graw Producer, Manning	Mr. Gary Webber Producer, Stony Plain
	Mr. Lud Prudek Producer, Bow Island	Mr. Roy Jensen Alberta Irrigation Projects Association, Shaughnessy	Dr. Tony Evans Norac Technologies, Edmonton
	Mr. Ian McGillivray Producer, Coaldale	Dr. James Byrne University of Lethbridge, Lethbridge	Mr. Bob Balisky Producer, DeBolt
		Ms. JoAnne Meents Alberta Wheat Pool, Calgary	Mr. Chuck Sterling AAFRD, Edmonton
		Dr. John Dormaar Agriculture Canada, Lethbridge	

Strategic Committees

Program Area	Production Research	Agricultural Processing Research	Marketing Research
<i>Chairman:</i>	Mr. Gail Fjordbotten AARI Director Producer, Gratum	Mr. Tom Towers AARI Director Producer, Red Deer	Mr. Gordon Wells AARI Director Tradex International, Calgary
<i>Executive Secretary:</i>	Mr. Don Macyk AAFRD, Edmonton	Mr. Dennis Glover AAFRD, Edmonton	Mr. Cliff Wulff AAFRD, Edmonton
<i>Members:</i>	Dr. Keith Briggs University of Alberta, Edmonton	Dr. Mike Stiles University of Alberta, Edmonton	Dr. Bernie Sonntag Agriculture Canada, Lethbridge
	Mr. Albert Pimm Producer, Grimshaw	Mr. Roy Shewchuk Hostess Frito-Lay Co, Taber	Mr. Elden Kaun Producer, Penhold
	Dr. Mick Price University of Alberta, Edmonton	Mr. David Best York Farms, Lethbridge	Mr. Ken Stickland KenAgra Management Services Ltd, Edmonton
	Dr. Jim McElgunn Agriculture Canada, Beaverlodge	Dr. Jim Pantekoeck Agriculture Canada, Lacombe	Dr. Bill Phillips University of Alberta, Edmonton
	Mr. Lynn Thacker Producer, Bow Island	Mr. Stan McDougall Master Plastics Inc, Calgary	Dr. Martin Wenkoff Canadian Genetics Inc, Carstairs
	Mrs. Betty Ditzler Home Economist, Lacombe	Mr. Ray Crimson Lakeside Research Ltd, Brooks	Mr. Bryan Walton Canadian Council of Grocery Distributors, Edmonton
	Mr. Daniel Groenenboom Producer, Kipp	Mr. Tom Howe Alberta Wheat Pool, Lethbridge	
	Dr. Terry Church AAFRD, Edmonton		

Program Area Sustainable Development and Conservation Research

Chairman: Mr. Norman Storch
AARI Director
Producer, Hanna

Executive Secretary: Mr. Brian Colgan
AAFRD, Edmonton

Members: Dr. Bob Fessenden
Alberta Research Council, Edmonton

Mr. Spencer Hilton
Alberta Conservation Tillage Society,
Strathmore

Mr. Ike Lanier
Producer, Lethbridge

Dr. Wayne Lindwall
Agriculture Canada, Lethbridge

Mr. Paul Barlott
Barlott Consulting Ltd, Sherwood Park

Dr. Steve Pawluk
University of Alberta, Edmonton

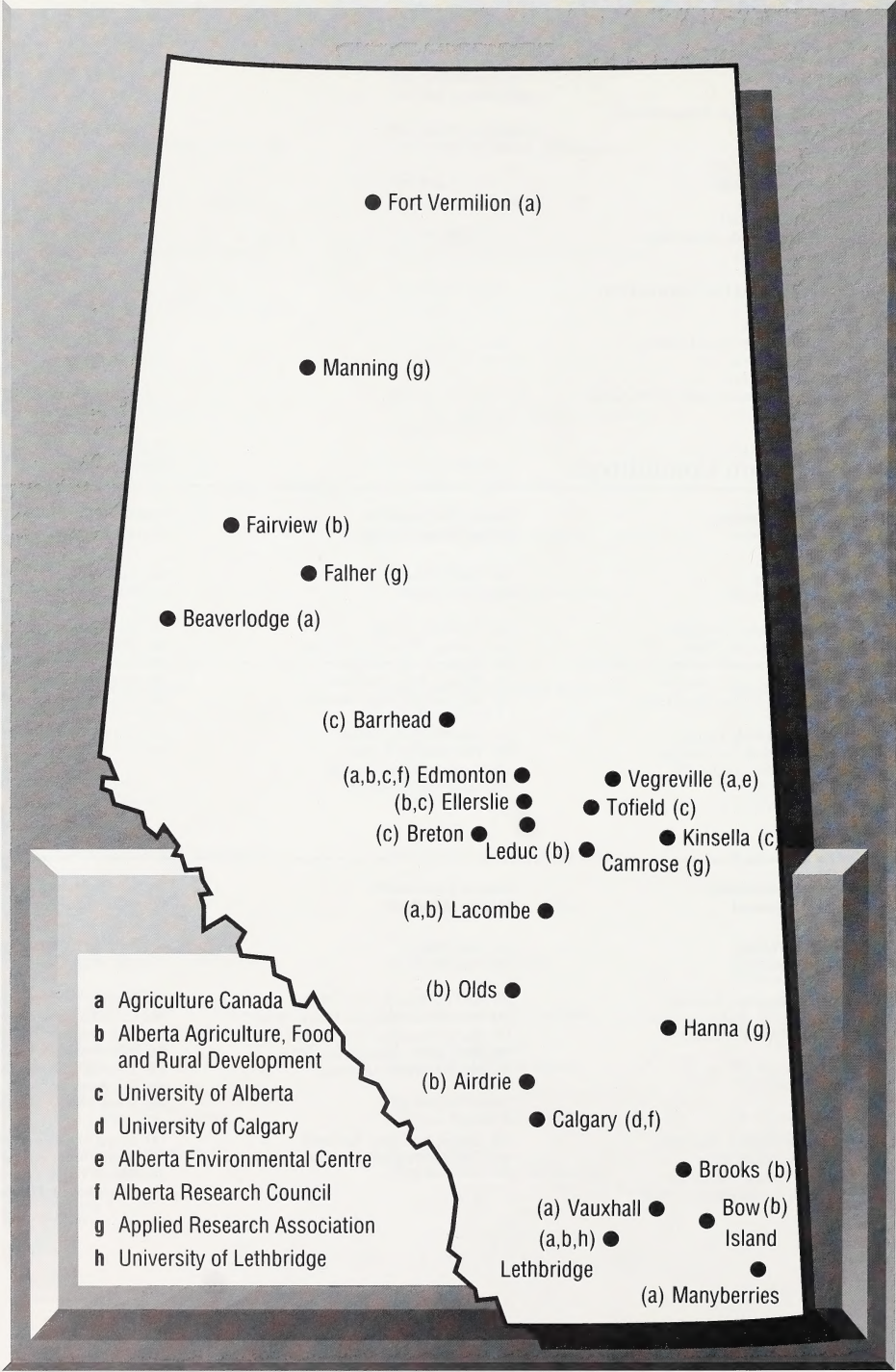
Dr. Ralph Ashmead
Ashmead Economic Research Inc, Calgary

On-Farm Demonstration Committees

Program Area	Region I Committee Southern Alberta	Region II Committee South Central Alberta	Region III Committee North Central Alberta
Chairman	Mr. Don Young AAFRD, Lethbridge	Mr. Glen Werner AAFRD, Airdrie	Mr. Alan Hall AAFRD, Red Deer
Producer Members	Mr. Steve Slemko, Coaldale Mr. Tom Machacek, Taber Mr. Buck Spencer, Barnwell Mr. Murray Markert, Vulcan Mr. Will Van Roessel, Bow Island	Mr. Del Bates, Acme Mr. Lindsay Eklund, Cochrane Mr. Arthur Jacques, Oyen Mr. William Noy, Rosebud Ms. Jane Senger-Lang, Beiseker	Ms. Joyce Bussard, Wetaskiwin Mr. Terry Crisp, Monitor Mr. Dale Anderson, Erskine Ms. Rosemary Brown, Caroline Mr. Al Chiswell, Lacombe
AAFRD Staff	Mr. Gordon Frank, Brooks Mr. Alan George, Lethbridge Mr. Jack Payne, Lethbridge	Mr. Don Milligan, Airdrie Mr. Ted Darling, Airdrie Mr. Richard Smith, Airdrie Mr. Larry Welsh, Airdrie	Mr. Ted Ford, Red Deer

Program Area	Region IV Committee Northeast Alberta	Region V Committee Northwest Alberta	Region VI Committee Peace River Region
Chairman	Mr. Ralph Berkan AAFRD, Vermilion	Mr. John Knapp AAFRD, Barrhead	Ms. Yvonne Grabowsky AAFRD, Fairview
Producer Members	Mr. Steve Blashko, Andrew Mr. Clement Fontaine, St. Paul Mr. Bruce Taylor, Hardisty	Mr. Eric Karlzen, Carrot Creek Ms. Brenda Scheideman, Stony Plain Mr. Richard Krikke, Neerlandia Mr. Alex Allen, Rivierre Qui Barre Mr. Herman Freh, Athabasca	Mr. Eugene Dextrase, High Level Mr. Dave Hegland, Wembley Mr. Jean Bergeron, St. Isidore Mr. John Reinders, Deadwood Ms. Rhonda Antonio, Bezanon Ms. Val Bates, Bonanza Mr. Harold Keay, High Prairie
AAFRD Staff	Mr. Shane Dobson, Two Hills Ms. Tennis Marx, Ryley Mr. Ellis Treffry, Vermilion Ms. Edith Zawadiuk, Two Hills	Mr. Robert Winchell, Barrhead Mr. Wayne Winchell, Barrhead	Ms. Leona Skulmoski, Falher Mr. Mark Olsen, Fairview Mr. Darryl Wells, Fairview Mrs. Nan Barlett, Fairview

Appendix 5: Agricultural Research Facilities in Alberta



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